



Writing Test Questions Like a Pro

GREG CONDERMAN
AND CAROL KOROGHLANIAN

Assessment, particularly standardized testing, is a hot topic in education today. Regardless of current fads, most classroom teachers have a need for objective tests—tests written by the teacher to assess student learning of specific objectives. Writing a good test is not easy, but by following the guidelines presented in this article, teachers can write better test items and, hence, evaluate student learning better.

Ms. Green, a fourth-grade teacher, is developing a test based on her 3-week Native American unit. Mr. Huang, a middle school science teacher, is preparing an exam on chemical properties. Professor Edwards is considering questions for an upcoming mid-term for his college students. Regardless of their students' age, grade, or the content area, all of these educators can apply the same guidelines for developing classroom tests. This article summarizes some guidelines for developing valid and reliable objective-type classroom tests that can be implemented by all educators. By adhering to just a few basic guidelines, you will achieve better assessment procedures (Popham, 1999).

Research explains why educators like Ms. Green, Mr. Huang, and Professor Edwards may be unfamiliar with the specifics of good test construction. First, assessment

textbooks typically include only brief sections on item writing and item analyses that are not linked to existing theory or research. In short, volumes devoted solely to item writing and validation are rare, so educators have very little information to guide their item-writing practices (Haladyna, 1994). Similarly, few teachers have received preservice or inservice instruction in writing and analyzing tests (Stiggins & Bridgeford, 1985). Consequently, although they spend a great deal of time evaluating students, they have few opportunities to learn how to do it well (Grinnell, 1991).

Learning how to "do it well," however, is essential for developing sound assessments. Marso and Pigge (1991) reported that teachers make several errors in test construction, especially with matching, completion, essay, and true-false items. The most frequent errors include (a) omitting directions, (b) writing incomplete stems,

(c) requesting trivial facts rather than big ideas, (d) developing ambiguous questions, and (e) providing clues to test questions. The authors also discovered that teachers tend to test items only at the knowledge level and that the number of years of teaching experience did not make a significant difference in the number and type of errors made in test construction. Grinnell (1991) emphasized that the consequences of evaluation are significant enough—for both teachers and students—to make the effort to become knowledgeable about creating good tests. In short, teachers need to be aware of the types of errors made in constructing test items (Overton, 2000). The following discussion will highlight some dos and don'ts of developing good true-false, multiple-choice, and matching items.

True-False Questions

An advantage of true-false, or binary-choice, items is that students can typically answer many items in a short time. Therefore, a large amount of content can be assessed in a short period. This two-choice question format is especially useful for assessing factual knowledge. Scoring also tends to be simple, objective, and speedy. A disadvantage is that students have a 50-50 chance of guessing the correct response (Dunn, 1995). Suggestions for writing true-false items include

- **Test only one idea in each item.** If there is more than one idea, teachers will not know which information students know. Furthermore, if one idea is true and the other is false, students do not know which part of the item to consider (Grinnell, 1991).
- **Write items that are either true or false without any qualifications.** Words like *always*, *never*, *all*, *sometimes*, *to a large degree*, *in most cases*, and *only* clue astute students about the answer. Therefore, items containing these words often assess students' test-taking skills rather than their content knowledge.

Tips for Writing Effective True-False Questions

- **Test one idea**
- **Write items without any qualifications**
- **Avoid using negatives**
- **Avoid items that are obviously true or false**
- **Write items of the same length**
- **Write an equal number of true and false items**

- **Be cautious when using negatives.** Negatives tend to confuse students as they expect questions to be worded in the positive. When students are working quickly through a test or if they are under stress, they may read past the negatives. Therefore, if a negative statement must be used (such as using the word *not* in a statement), underline, highlight, or bold the word *not* to signal the reader. Always avoid double negatives, as they are confusing and take too much time for students to interpret. Also, do not make an obviously true statement false merely by inserting the word *not* (Dunn, 1995).
- **Word the item so that superficial knowledge suggests an incorrect response.** In other words, construct items that are not obviously true or false. The goal is to get students to think about the question. Do not lift sentences or phrases from the text.
- **Maintain a balance with items and correct responses.** Write items that are approximately the same length, and try to keep an equal number of items representing the two response categories.

Poor Examples of True-False Items

1. Jupiter is not the largest planet in the solar system.
2. George Washington was the first president of the United States, and his nickname was "Old Hickory."
3. Most middle class families will get some tax break under the president's new tax proposal.

Better Examples of True-False Items

1. Uranus is the largest planet in the solar system.
Explanation: Avoiding the use of a negative will help your students understand the question.
2. George Washington's nickname, according to our textbook, was "Great Commander in Chief."
Explanation: The previous question asked about two ideas, George Washington's nickname and his place in U.S. history—if students know one of the ideas is wrong, they know the answer to the entire question is false.
3. According to the article read for class, a family earning \$40,000 will save \$2,000–\$2,500 under the new proposed tax plan. **Explanation:** The poorly phrased question contained the qualifier "most" and the vague term "some." These provide clues to the correct response.

Multiple-Choice Items

Multiple-choice items are popular on tests. They include a stem—usually in the form of an incomplete statement or a direct question—and a list of possible answers. Because

they contain several answers that differ in their relative correctness, the examinee may be asked to make subtle distinctions among the responses. Multiple-choice items are versatile, can be scored quickly and accurately, are easier to respond to, and are preferred by students (Dunn, 1995). Suggestions for writing good multiple-choice items include

- **Include the bulk of information in the stem.** The stem should clearly state the problem and help orient the student by providing a frame of reference. The prepared student should be able to anticipate the correct answer after reading the complete stem. In most cases, a direct question is preferred over an incomplete stem (Grinnell, 1991).
- **Avoid using “all of the above” or “none of the above” options.** Test-wise students know that *all of the above* is usually the correct answer. Also, if students know that two of the responses are correct, then *all of the above* is automatically the right answer. Other students read the first choice (A), realize that it is correct, and choose this as the answer without reading through the remaining alternatives. Use *none of the above* only when (a) testing older students who can handle more difficult questions, (b) purposefully making the test more difficult, or (c) developing math tests because *none of the above* helps prevent guessing (Popham, 1999).
- **Arrange responses in a logical order, such as alphabetical order, numerical order, or chronological order.** Arranging answers in a logical sequence saves time for the student by providing an efficient organizational structure.
- **Avoid any clues that lead the reader to the correct answer.** Typical unintentional clues include (a) grammatical cues such as the articles *a* or *an* or singular or plural clues, (b) word clues where the same or a similar word is used in the stem and in one of the

responses, or (c) question or answer clues from other questions on the test. Proofreading the test or having a colleague proofread it may eliminate these unintentional errors that reduce the exam’s validity.

- **Maintain a balance with items and responses.** As with true–false items, keep responses about the same length. Astute test takers know that all things being equal, the longest response is often the correct response. If all responses cannot be written to be of equal length, then write at least two responses of equal length. Similarly, scatter the correct responses throughout the test. Many novice test writers are reluctant to place the correct answer in the Choice A position because they feel it immediately provides the answer. However, all responses should be used equally (Popham, 1999).
- **Use negatives sparingly.** As with true–false items, items with *not* should be used only when necessary due to the confusion they cause students.

Poor Examples of Multiple-Choice Items

1. Des Moines is not
 - (a) the largest city in the state of Iowa
 - (b) home of the daily *Des Moines Register* newspaper
 - (c) the original state capital of Iowa
 - (d) considered the economic and political hub of Iowa
2. Nebraska became a state in
 - (a) 1854
 - (b) 1845
 - (c) 1904
 - (d) 1824
3. Dustin Hoffman is an
 - (a) politician
 - (b) actor
 - (c) scientist
 - (d) psychologist

Tips for Writing Sound Multiple-Choice Questions

- **Write direct questions**
- **Make the stem longer than the choice**
- **Avoid using *all* or *none* choices**
- **Arrange choices in a logical order**
- **Avoid clues within the item or test**
- **Avoid using negatives**
- **Write items of the same length**
- **Scatter the correct choices equally**

Better Examples of Multiple-Choice Items

1. Which statement below describes Des Moines, Iowa?
 - (a) Des Moines is the largest city in Iowa.
 - (b) Des Moines is home of the University of Iowa.
 - (c) Des Moines is the original state capital of Iowa.
 - (d) Des Moines is located in Linn County.

Explanation: Asking a direct question is usually a better strategy, and avoiding the negative is always preferred. Incomplete sentences and negatives turn a test into a reading challenge, not necessarily a test of the concepts you expected students to learn.

2. In which year did Nebraska become a state?
 - (a) 1824

- (b) 1845
- (c) 1854
- (d) 1904

Explanation: Again, ask a direct question rather than using an incomplete stem. Also, organizing the answers in a logical order (in this case chronological) helps speed the student through the test, allowing you to test more objectives in a given amount of time.

3. Which of the following is Dustin Hoffman's occupation?
- (a) actor
 - (b) politician
 - (c) psychologist
 - (d) scientist

Explanation: Avoid giving the students grammatical clues such as *a* or *an*, and use a complete question for clarity.

Matching Items

Matching items requires that the reader make an association between a column of stimulus words or phrases and an adjoining list of responses. Many questions can be answered in a short period of time, thus allowing assessment of a large sampling of content. Suggestions for writing matching items include the following:

- **Only use homogeneous lists.** Only use matching items when it is possible to create a homogeneous set of premises and a homogeneous set of responses. When a matching section includes a variety of concepts (as shown in the poor example), students can easily match items due to their distinctness.
- **Use brief lists, with the longer phrases on the left.** Placing the longer phrases on the left and the shorter phrases or terms on the right saves reading time for the student. Generally, students should read and match the longer phrase to the shorter phrase.

Tips for Writing Sound Matching Questions

- **Use homogeneous lists**
- **Place longer phrases in the left column**
- **Include more responses than premises**
- **Arrange responses in a logical order**
- **Restrict the number of matches to 10 or fewer**

- **Include a few more responses than premises.** By including a few more responses than premises, you eliminate the possibility of students matching the last few items and getting them correct through a process of elimination.
- **Place the responses in an appropriate order.** As mentioned earlier, placing the answers in alphabetical, chronological, or numerical order adds an organizational structure that assists students in quickly locating their intended response.
- **Keep each matching section to 10 items or less.** More than 10 items in each section makes it difficult for students to track information from one column to the other.

Poor Example of a Matching Section

Match the descriptions in Column A to their terms in Column B.

Write the letter in the blank.

Column A

- ___1. a river in Iowa
- ___2. the capitol city of Iowa
- ___3. the birthplace of Herbert Hoover
- ___4. an old German settlement in Iowa
- ___5. a famous artist from Iowa

Column B

- (a) West Branch
- (b) Amana Colonies
- (c) Cedar River
- (d) Grant Wood
- (e) Des Moines

Better Example of a Matching Section

Match the cities in Column A to their states in Column B.

Write the letter in the blank.

Column A

- ___1. Jefferson City
- ___2. Austin
- ___3. Seattle
- ___4. Omaha
- ___5. Madison

Column B

- (a) Kansas
- (b) Minnesota
- (c) Missouri
- (d) Nebraska
- (e) Texas
- (f) Washington
- (g) Wisconsin

Explanation: The previous matching question included an equal number of responses and premises that allowed students to guess the correct answer through a process of elimination. Furthermore, the poorly organized questions tested more than one concept. In general, use matching items to test a single concept and organize the choices into a logical sequence, which in this case was alphabetical order.

Conclusion

The ability to develop good teacher-made tests is an important skill for educators at all levels. This article high-



lighted guidelines for writing good true–false, multiple-choice, and matching items. Honoring these guidelines will help educators at all levels—such as Ms. Green, Mr. Huang, and Professor Edwards—increase the integrity of their classroom assessments.

Additional information on test construction is provided on the World Wide Web. A sampling of these Web sites is provided in the Appendix.

ABOUT THE AUTHORS

Greg Conderman, EdD, is a professor in the Department of Education and an assessment coordinator at St. Ambrose University. His research interests include effective methods for students with mild disabilities and assessment. **Carol Koroghlanian**, PhD, is an assistant professor in foundations of education at the University of Wisconsin–Eau Claire. Her research interests include integration of technology in the classroom, use of multimedia in learning, and preservice teacher education. Address: Greg Conderman, Education Department, 218 Ambrose Hall, St. Ambrose University, 518 W Locust St., Davenport, IA 52803.

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Appendix

- <http://www.byu.edu/ccs/learning/anxiety.shtml/>
site with tips for helping students reduce test anxiety and better prepare for tests
- <http://ub-counseling.buffalo.edu/stresstestanxiety.shtml/>
site with tips for helping students reduce test anxiety and a link to a study skills site for tips on taking tests
- <http://www.psychwww.com/selfquiz/aboutq.htm/>
site that discusses how to write multiple-choice questions for higher-level objectives
- <http://darkwing.uoregon.edu/~tep/assessment/mc4critthink.html/>
site that discusses writing items in relation to Bloom's taxonomy
- www.hcc.hawaii.edu/intranet/committees/FacDevCom/guidebk/teachtip/quizzes.htm/
site that discusses the role of assessment in the classroom

